

WHAT IS CLAIMED IS:

1. An apparatus for changing optical disks, mounted in an optical disk drive, provided for holding a plurality of trays or optical disks, the optical disk drive including a bottom plate and a top plate, the apparatus for changing optical disks comprising at least:

5 a plurality of driving shafts, vertically positioned on the bottom plate for clamping the trays or the optical disks, each of the driving shafts having a vertical axis and rotating synchronously around the vertical axis thereof to raise and lower the trays or the optical disks, the driving shafts comprising:

10 a thread region, mounted on the bottom plate, the thread region comprising threads for engaging with the trays or the optical disks, the thread region comprising a lower thread portion and an upper thread portion, wherein the pitch for threads in the upper thread portion is larger than that in the lower thread portion; and

15 an upright region, located on the thread region, wherein a flat surface is formed between the upright region and the

thread region; and

a plurality of elastic devices, each of the elastic devices having one end respectively fixed to a top end of the upright region of the corresponding driving shaft or fixed beneath the top plate, and the other end provided
5 together with the flat surface for clamping the tray or the optical disk located in the range of the upright regions.

2. The apparatus according to claim 1, wherein the thread in the upper thread portion has a flat thread part for situating one of the trays or one of the optical disks to a disk loading in/out position.

10 3. The apparatus according to claim 1, wherein the elastic devices are a plurality of coil springs, respectively encircling around an upper end of the upright region of the driving shafts, and each of the coil springs has one end respectively fixed to the top end of the upright region of the driving shafts, and the other end provided together with the flat surface
15 of the corresponding driving shaft for clamping the tray or the optical disk located in the range of the upright regions.

4. The apparatus according to claim 1, wherein the elastic devices are a plurality of elastic plates, and each of the elastic plates has respectively

one end fixed beneath the top plate and located near the upright region of driving shafts, and the other end provided together with the flat surface of the corresponding driving shaft for clamping the tray or the optical disk in the range of the upright regions.

- 5 5. An apparatus for changing optical disks, mounted in an optical disk drive, provided for holding a plurality of trays or optical disks, the optical disk drive including a bottom plate, the apparatus for changing optical disks comprising at least:

10 a plurality of driving shafts, vertically positioned on the bottom plate for clamping the trays or the optical disks, each of the driving shafts having a vertical axis and rotating synchronously around the vertical axis thereof to raise and lower the trays or the optical disks, the driving shafts comprising:

 an upright region, mounted on the bottom plate; and

15 a thread region, located on the upright region, the thread region comprising threads for engaging with the trays or the optical disks, the thread region comprising a lower thread portion and an upper thread portion, wherein the pitch for threads in the lower thread portion is larger

than that in the upper thread portion, and wherein a flat surface is formed between the upright region and the thread region; and

a plurality of elastic devices, each of the elastic devices having one end fixed on the bottom plate and located near the corresponding driving shaft, and the other end provided together with the flat surface of the corresponding driving shaft for clamping the tray or the optical disk located in the range of the upright regions.

6. The apparatus according to claim 5, wherein the thread in the lower thread portion has a flat thread part for situating one of the trays or one of the optical disks to a disk loading in/out position.

7. The apparatus according to claim 5, wherein the elastic devices are a plurality of coil springs, encircling around a lower end of the upright region of the driving shafts, and each of the coil springs has one end respectively fixed on the bottom plate, and the other end provided together with the flat surface of the corresponding driving shaft for clamping the tray or the optical disk located in the range of the upright regions.

8. The apparatus according to claim 5, wherein the elastic devices are a

plurality of elastic plates, and each of the elastic plates has one end respectively fixed on the bottom plate, and the other end provided together with the flat surface of the corresponding driving shaft for clamping the tray or the optical disk in the range of the upright regions.

- 5 9. An apparatus for changing optical disks, mounted in an optical disk drive, provided for holding a plurality of trays or optical disks, the optical disk drive including a bottom plate and a top plate, the apparatus for changing optical disks comprising:

10 a plurality of driving shafts, vertically mounted on the bottom plate for clamping the trays or the optical disks, each of the driving shafts having a vertical axis and rotating synchronously around the vertical axis thereof to raise and lower the trays or the optical disks, the driving shafts comprising:

 a lower upright region, mounted on the bottom plate;

15 a thread region, mounted on the lower upright region, the thread region comprising threads for engaging with the trays or the optical disks, wherein a lower flat surface is formed between the thread region and the lower upright region; and

an upper upright region, located on the thread region, wherein an upper flat surface is formed between the upper upright region and the thread region;

5 a plurality of upper elastic devices, each of the upper elastic devices having one end fixed to a top end of the upper upright region of the corresponding driving shaft or fixed beneath the top plate, and the other end provided together with the upper flat surface for clamping the tray or the optical disk located in the range of the upper upright regions; and

10 a plurality of lower elastic devices, each of the lower elastic devices having one end fixed on the bottom plate and located near the corresponding driving shaft, and the other end provided together with the lower flat surface of the corresponding driving shaft for clamping the tray or the optical disk located in the range of the lower upright regions.

10. The apparatus according to claim 9, wherein the thread has a flat thread part for situating one of the trays or one of the optical disks to a disk loading in/out position.

11. The apparatus according to claim 9, wherein the upper elastic devices are a plurality of coil springs, respectively encircling around an upper

end of the upper upright region of the driving shafts, and each of the coil springs has respectively one end fixed to a top end of the corresponding driving shaft, and the other end provided together with the upper flat surface of the corresponding driving shaft for clamping the tray or the optical disk located in the range of the upper upright regions.

12. The apparatus according to claim 9, wherein the upper elastic devices are a plurality of elastic plates, and each of the elastic plates has one end respectively fixed beneath the top plate and located near the upper upright region of the corresponding driving shaft, and the other end provided together with the upper flat surface of the corresponding driving shaft for clamping the tray or the optical disk in the range of the upper upright regions.
13. The apparatus according to claim 9, wherein the lower elastic devices are a plurality of coil springs, respectively encircling around a lower end of the lower upright region of the corresponding driving shaft, and each of the coil springs has respectively one end fixed on the bottom plate, and the other end provided together with the lower flat surface of the corresponding driving shaft for clamping the tray or the optical disk located in the range of the lower upright regions.

14. The apparatus according to claim 9, wherein the lower elastic devices are a plurality of elastic plates, each of the elastic plates has one end respectively fixed on the bottom plate, and the other end provided together with the lower flat surface of the corresponding driving shaft for clamping the tray or the optical disk in the range of the lower upright regions.

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